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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/506,172

02/17/2000

Amir Doron

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02/12/2004

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EXAMINER

ROGERS, SCOTT A

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 02/12/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/506,172

Applicant(s)

DORON, AMIR

Examiner

Scott A Rogers

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☒ Claim(s) 6 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's amendment filed 01 November 2003 canceling claims 1-5 has been entered. The previous indication of allowability of claims 6-10 is withdrawn in view of the new ground(s) of rejection.

Claim Objections

The following quotations of 37 CFR § 1.75(a) is the basis of objection:

(a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

Claims 6-7 are objected to under 37 CFR § 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

On the first few lines on claims 6 and 7, the language "transforming a pixel data value expressed as a fixed bit color space value of a given resolution into a like fixed bit color space value of another given resolution" lacks clarity. Referring to the specification, page 7, lines 28-29, applicant states "RGB colors must be mapped to the closest color that can be printed". While the Examiner can determine the meets and bounds of the claims, to remove this question of clarity in the claims and to be consistent with the specification, use of the language "a like" should be replaced with

the language "the closest possible". For purposes of the rejection below, this claim language has been interpreted with the change suggested and in view of specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art in view of Eschbach (US5243443).

Referring to claim 6:

The admitted prior art discloses in a system with resolution conversion means and color space conversion means, the technique for transforming a pixel data value expressed as a fixed bit color space value of a given resolution into a like (the closest possible) fixed bit color space value of another given resolution is known in the art (page 7, line 27 to page 8, line 2 of Applicant's specification).

The admitted prior art does not disclose means for transforming said like (closest possible) fixed bit color space value of another given resolution into a super pixel cell, wherein individual ones of the cells are assigned available output values where the average of the values in said cells is selected to be as close as possible to said fixed bit color space value of another given resolution.

However, Eschbach discloses a technique in an error diffusion system (Fig. 1) which renders obvious the above feature missing from the admitted prior art. Eschbach teaches means for transforming an input pixel data value (e.g., the fixed bit color space value of another given resolution) by adding a screen value from a set of stored screen values to generate a screened input value. The screened input value is compared to a threshold value, to produce an output which is one of a desired output set of values. The value of the gray level of the output image in the portion of the output image corresponding to a halftone cell (i.e., a super pixel cell) is integrated to produce an average output gray value. The average output gray value is compared to the input gray value, to determine an input/output difference. The input/output difference controls the threshold value, so that the threshold is set to attempt to maintain gray density equality, minimizing the distance between density values, of the input image and the output image. In this way, the gray value of the input pixel data is represented by the average output gray value with a deviation of not more than 0.5 of one level over the full halftone cell (i.e., the individual ones of the cells are assigned available output values where the average of the values in said cells is selected to be as close as possible to said fixed bit color space value of another given resolution). See col. 3, line 49 to col. 4, line 20, noting the example on lines 12-20 of col. 4. While the discussion includes consideration of a modified input value where error from processing of previous pixels is added to the input pixel data value, the technique applies to the case where no error is added to the input pixel data value or the input pixel data value is an initial input. Also,

while the cited passage does not refer to color pixel values, Eschbach addresses the applicability in the color case in col. 4, line 56 to col. 5, line 4 and in col. 8, lines 7-10.

It would have been obvious to one of ordinary skill in the art to modified the admitted prior art system in view of Eschbach to have provided the feature of a means for transforming said like (closest possible) fixed bit color space value of another given resolution into a super pixel cell, wherein individual ones of the cells are assigned available output values where the average of the values in said cells is selected to be as close as possible to said fixed bit color space value of another given resolution. Such a modification would provide an error diffusion technique initially determines the best fit halftone cell (super pixel cell), and propagates a minimized halftone error in order to maintain gray density as suggested by Eschbach in col. 3, lines 33-37 and col. 6, lines 40-42. Note "MAE" refers to Minimum Average Error.

Referring to claim 7:

Claim 7 is the method claim with all the steps set forth corresponding directly to the function of the means set forth in apparatus claim 6. Therefore, claim 7 is rejected for the same reasons given above for claim 6.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-10 is rejected under 35 U.S.C. 102(b) as being anticipated by Eschbach.

Referring to claims 8-9:

Eschbach discloses a multi-level error diffusion method comprising a processor (Fig. 1) for creating an m by n super pixel cell (e.g., 2 by 2 halftone cell) as an output pixel value for each individual one of a plurality of single input pixel values indicative of an image to be printed and said processor assigning to individual ones of the m by n super pixel cells available printer output color values where the average of the assigned output values are selected to be as close as possible to corresponding individual one of the single input pixel values. See col. 3, line 49 to col. 4, line 20, as discussed above noting the example on lines 12-20 of col. 4 and the discussion of color in col. 4, line 56 to col. 5, line 4 and in col. 8, lines 7-10. Eschbach addresses the issue of printer output in the background and col. 4, lines 62-65 and col. 5, lines 13-15 and the case of multi-level output systems which would involve a "multi-level error diffusion" process.

Referring to claim 9:

By virtue of Eschbach's discussion of output by printers and multi-level output systems as pointed out above, Eschbach inherently suggests the case of a multi-level printer for receiving the individual ones of the m by n super pixel cells having assigned output values and converting them into printer data to form a printed image.

Referring to claim 10:

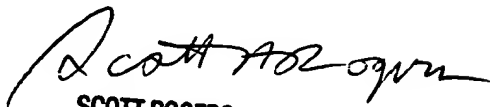
Claim 10 is the method claim with all the steps set forth corresponding directly to the function of the means set forth in apparatus claim 8. Therefore, claim 10 is rejected for the same reasons given above for claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Rogers by telephone at 703-305-4726 and by e-mail address at scott.rogers@uspto.gov.

The official fax number for Technology Center 2600 where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC 2600 Customer Service at 703-306-0377.

06 February 2004


SCOTT ROGERS
PRIMARY EXAMINER